



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,707	10/09/2001	Martin Wustefeld	089324-000000US	7870
20350	7590	07/26/2005	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			KRONENTHAL, CRAIG W	
			ART UNIT	PAPER NUMBER
			2623	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/974,707	WUSTEFELD ET AL.
	Examiner	Art Unit
	Craig W. Kronenthal	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 4/1/05.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-13 and 18-22 is/are rejected.
- 7) Claim(s) 14-17 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 01 April 2005 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/7/05.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed April 1, 2005, has been entered and made of record.
2. Objection to the drawings has been withdrawn in view of Applicant's amendments to the drawings.
3. Objections to claims 4, 5, 8, 9, 12, 19, and 20 as being allowable if rewritten in independent form are withdrawn. These claims are now rejected to over prior art as explained below.

Response to Arguments

4. Applicant's arguments, see p. 11-13, with respect to the rejection(s) of claim(s) 1 and 18 under 35 U.S.C. §102(b) as being anticipated by Nagasaka et al. (PN 6,157,744) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Fembok (PN 6,075,238).
5. Applicant's arguments, see p. 13-14, with respect to the rejection(s) of claim(s) 1 and 6 under 35 U.S.C. §102(b) as being anticipated by Kawabata et al. (PN 4,783,833) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Fembok (PN 6,075,238).

6. Applicant's arguments, see p. 14, with respect to the rejection(s) of claim(s) 2, 3, and 21 under 35 U.S.C. §103(a) as being anticipated by Nagasaka in view of Kawachi et al. (PN 6,285,787) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Fembok (PN 6,075,238).

7. Applicant's arguments, see p. 14, with respect to the rejection(s) of claim(s) 13 and 22 under 35 U.S.C. §103(a) as being anticipated by Kawabata in view of Katayama et al. (PN 6,640,004) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Fembok (PN 6,075,238).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 1 rejected under 35 U.S.C. 102(b) as being anticipated by Fembok (PN 6,075,238).

Regarding Claim 1: Fembok discloses a method for the detection of an object moving in the monitored region of a camera, wherein

- an actual image of the monitored region is recorded by the camera [Figure 1. A CCD camera (8) obtains an image of a monitored area (B) (col. 3 lines 44-51).];
- at least one actual measured value is derived from the actually recorded image which provides information on differences between at least two different image regions and which is invariant with respect to image displacements, image rotations and/or image size changes [The camera (8) determines the optical characteristics or intensities from the obtained image, which provide information on the differences between light area parts (14) and dark area parts (16) (col. 3 lines 48-51, 55-59, and col. 4 lines 6-10). These intensities are invariant with respect to image displacements, image rotations, and image size changes.];
- this actual measured value is compared with a corresponding reference value derived from a stored reference image recorded by the camera [The monitoring means (10) stores the reference pattern (4) having reference intensities (col. 3 lines 51-54). The reference pattern's optical characteristics are compared with the actual pattern's optical characteristics by the signal processing means (10) to determine if they are the same (col. 3 lines 48-51).]; and
- an object recognition reaction is triggered on a pre-set deviation of the actual measured value from the reference value [The signal processing means (10) upon detecting differences in lightness or in color, between an actual image and a reference image, will trigger the turning-off of the machine being monitored

(col. 4 lines 9-12). In this example the pre-set deviation corresponds to any difference.].

Regarding Claim 2: Fembok discloses a method in accordance with claim 1, characterized in that a structure, which is a component of the image, is superimposed on the reference image and the actually recorded image; and in that the reference value and a measured value are gained from the corresponding structure information [Figure 1. The structure corresponds to the pattern field (4), which is superimposed on all images (col. 3 lines 45-47). Additionally, the optical characteristics of the reference and actual images are gained from the light (12) and dark (14) areas of the pattern (4) (col. 3 lines 55-59).].

Regarding Claim 3: Fembok discloses a method in accordance with claim 2, characterized in that the structure in the monitored region is generated during the recording of the reference image and of the actual images of the monitored region by means of a projection device and/or by means of a moved light beam [The pattern field (4) is generated by objective (6), which throws pattern (4) onto images (col. 3 lines 45-48).].

Regarding Claim 4: Fembok discloses a method in accordance with claim 2, characterized in that mutually different structures are generated in the monitored region simultaneously or in time sequence [Figure 1. The light (12) and dark (14) areas are

mutually different structures that are generated simultaneously in the monitored region (col. 3 lines 55-63).].

Regarding Claim 6: Fembok discloses a method in accordance with claim 1, characterized in that an image of an object-free monitored region (15) is used as the reference image [Figure 2. The reference image (36) shows an object-free monitored region, since it includes only the pattern (4) (col. 4 lines 51-54).].

Regarding Claim 7: Fembok discloses a method in accordance with claim 1, characterized in that a reaction is triggered when the comparison of the actual measured value with the reference value provides a comparison value which lies outside a pre-set tolerance range [Fembok discloses that a reaction is triggered by any difference in lightness or color, and therefore, the tolerance range includes only zero (col. 4 lines 9-12).].

Regarding Claim 8: Fembok discloses a method in accordance with claim 1, characterized in that the image information or structure information comprises, among other things, information related to reference points, with the reference points in particular marking the boundaries of the monitored region [Figure 1. The pattern (4) comprises light (12) and dark (14) areas, which indicate the reference intensities including those intensities at the boundaries of the monitored region (col. 3 lines 55-63). A diaphragm (not shown) is also used to ensure that the reference intensities mark the

boundaries of the monitored region (B) by blanking parts of the image that fall outside the reference boundaries (col. 4 lines 1-5).].

Regarding Claim 10: Fembok discloses a method in accordance with claim 1, characterized in that a plurality of actual measured values of the same or of a different type is derived from the actual image information or structure information and is compared with corresponding stored reference values derived from the image information or the structure information of the reference image [Figure 1. The plurality of intensities in the actual measured image are compared with the intensities of the reference pattern (4) stored by the monitoring means (10) (col. 3 lines 48-54).].

Regarding Claim 11: Fembok discloses a method in accordance with claim 1, characterized in that the measured value(s) or reference value(s) include one or more pieces of the following information:

- brightness difference between two different image regions or structure regions or between a reference point and an image region or a structure region [Figure 1. The camera (8) determines the optical characteristics or intensities from the obtained image, which provide information on the differences in degree of brightness between light area parts (14) and dark area parts (16) (col. 3 lines 48-51, 55-59, and col. 4 lines 6-10).].

Regarding Claim 12: Fembok discloses a method in accordance with claim 1, characterized in that a correlation function is calculated between at least one region of the actual image information or structure information and a corresponding region of the image information or of the structure information of the reference image and the shape of this correlation function and/or determined values of this correlation function are used for the decision with respect to the triggering of an object recognition reaction [Figure 1. The signal processing means (10) performs correlation between the lightness or color of an actual image and the lightness or color of a reference image (col. 3 lines 48-54). The correlation compares the light areas (12) and dark areas (14) of the actual image with the light areas (12) and dark areas (14) of the reference image, respectively. If the correlation detects differences then the signal processing means (10) will trigger the turning-off of the machine being monitored (col. 4 lines 9-12).].

Regarding Claim 18: The analogous arguments of claim 1 are applicable to claim 18.

Regarding Claim 19: The analogous arguments of claim 8 are applicable to claim 19.

Regarding Claim 21: The analogous arguments of claim 3 are applicable to claim 21.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5, 9, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fembok.

Regarding Claim 5: The examiner takes official notice that it would have been obvious to one of ordinary skill in the art to modify Fembok so that different projection devices are used for the generation of the different structures. Although Fembok only utilizes one projection device (Figure 1, item 6) to project both the light (Figure 1, item 12) and dark (Figure 1, item 14) areas, it would have been obvious that separate projection devices for each of these areas would be an alternative design.

Regarding Claim 9: Fembok discloses a method in accordance with claim 8, using light and dark areas as reference points. Fembok does not disclose expressly the light and dark areas being generated by reflectors.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Fembok to fix reflectors within the monitored region to create these light and dark areas. Applicant has not disclosed that the use of reflectors provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention

to perform equally well with projecting light and dark areas because both designs result in light and dark areas invariant relative to the monitored region.

Therefore, it would have been obvious to one of ordinary skill in this art to modify Fembok's projected light and dark areas with light and dark areas generated by reflectors to obtain the invention as specified in claim 9.

Regarding Claim 20: The analogous arguments of claim 9 are applicable to claim 20.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fembok in view of Schatz et al. (PN 6,297,844). (hereinafter Schatz)

Regarding Claim 13: Fembok discloses a method in accordance with claim 1, but does not disclose that the monitored region is illuminated by means of at least one light source during the recording of the reference image and of the actual images of the monitored region. However, Schatz does disclose detecting changes within a monitored region that is illuminated by means of at least one light source during the recording of the reference image and of the actual images of the monitored region [Figures 1, 3, and 4. In the arrangement step (302) structure light is projected into the scene (32) (col. 6 lines 22-29). The structure light is in the scene (32) when the reference image is captured (304) and when the actual images are captured (402) (col. 8 lines 14-19).]. It would have been obvious to one of ordinary skill in the art to modify Fembok pattern (4) to be generated by structured light as taught by Schatz. One would

be motivated to make this modification to optimize characteristics of the scene and to calibrate the images so that they may be compared more accurately (col. 6 lines 22-32).

Regarding Claim 22: The analogous arguments of claim 13 are applicable to claim 22.

Allowable Subject Matter

13. Claims 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Yuasa et al. (PN 4,679,077) is cited for teaching the illumination of a monitored scene for the detection of moving objects.
- Lee et al. (PN 5,151,945) is cited for teaching monitoring a field of view and distinguish between ambient intensity changes and changes due to moving objects.
- Ito et al. (PN 6,754,367) is cited for teaching eliminating erroneous detections of moving objects within a field of view.

- Nagaya et al. (5,721,692) teaches a moving object detection apparatus for judging whether background changes are due to structural variations or variations in lighting conditions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig W. Kronenthal whose telephone number is (571) 272-7422. The examiner can normally be reached on 8:00 am - 5:00 pm / Mon. - Fri.. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (571) 272-7414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

07/22/05
CWK

JINGGE WU
PRIMARY EXAMINER

7/23/05